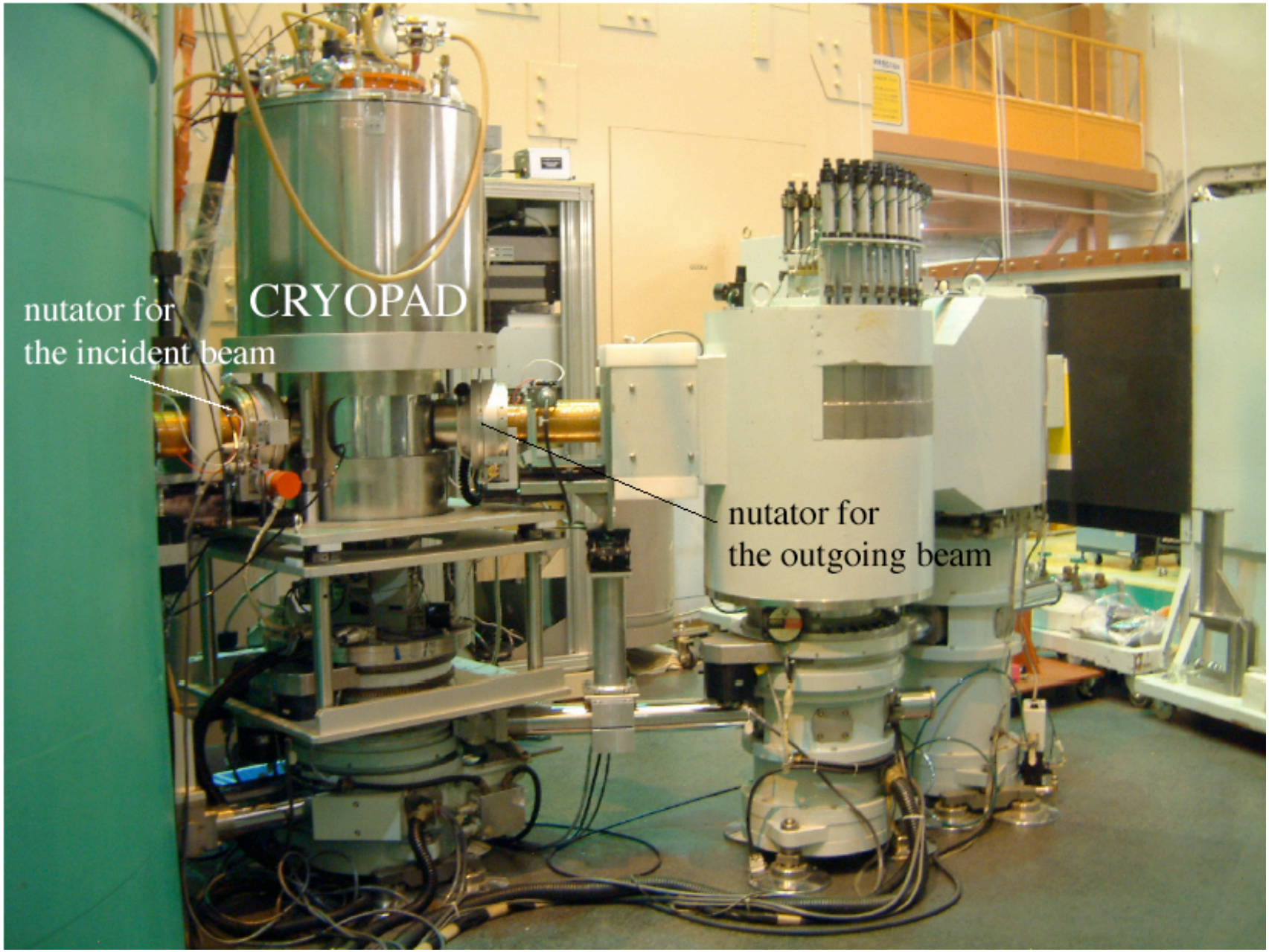
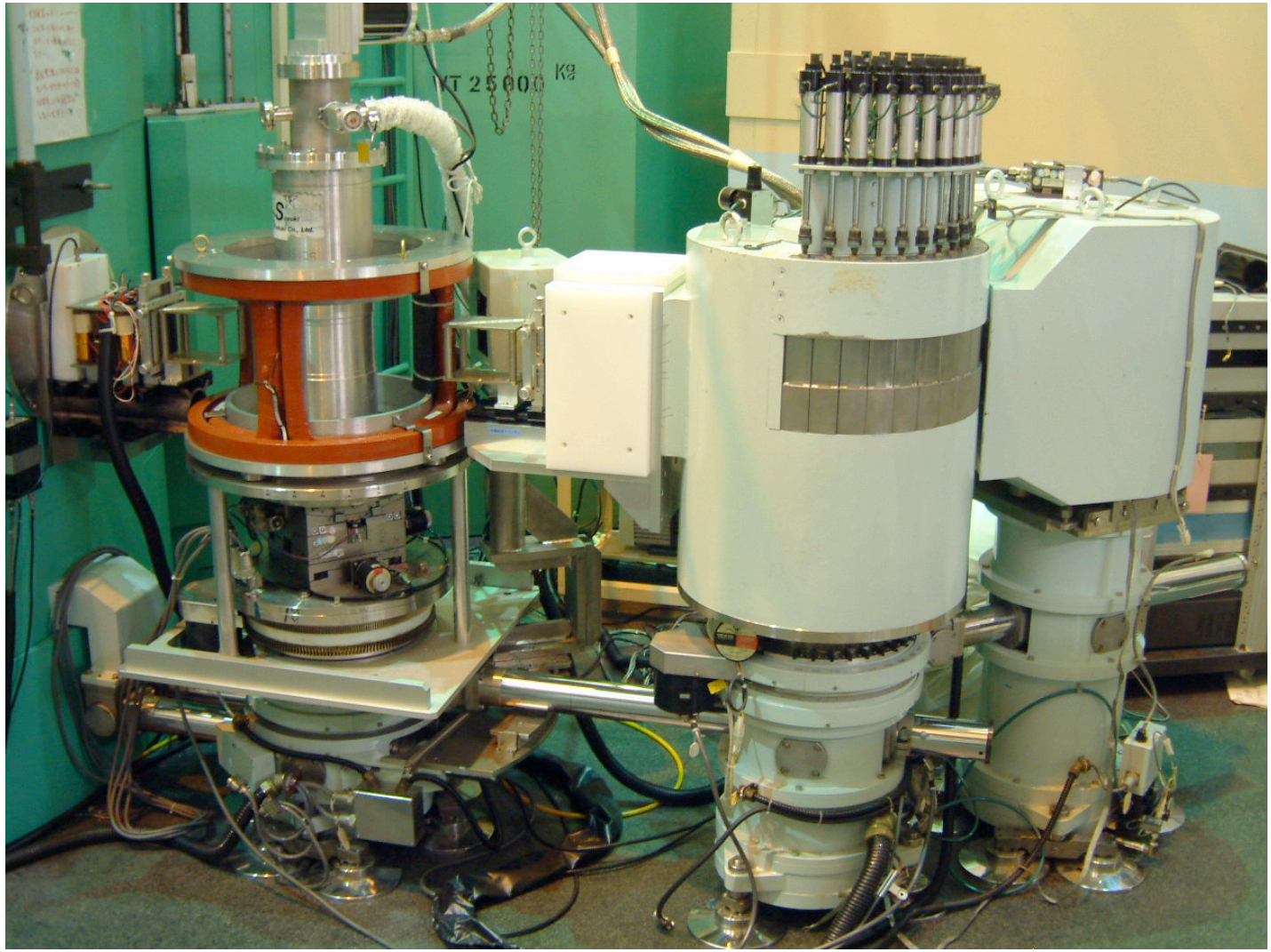

nutator for
the incident beam
CRYOPAD
nutator for
the outgoing beam

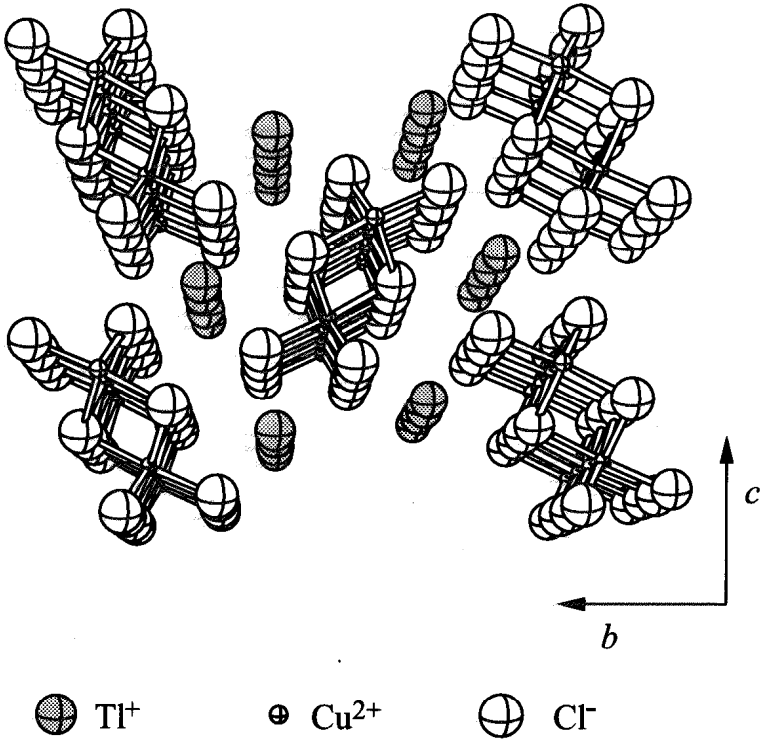
TAS-1 in Longitudinal Polarization Analysis mode

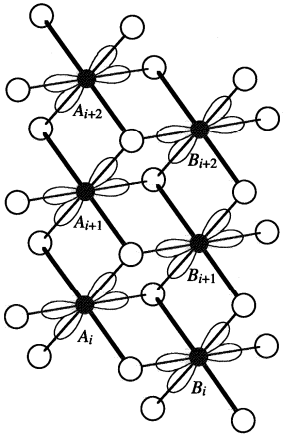


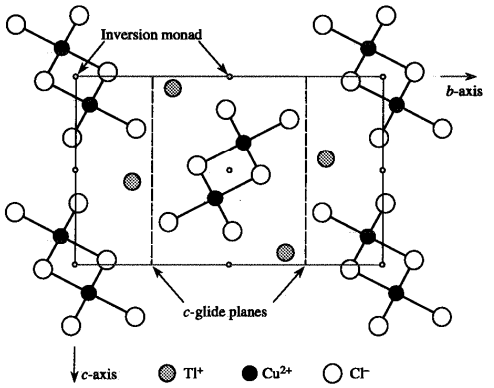
Elastic experiment on pressure induced magnetic order in $TlCuCl_3$

Crystal structure of $TlCuCl_3$

Monoclinic (space group $P2_1/c$)

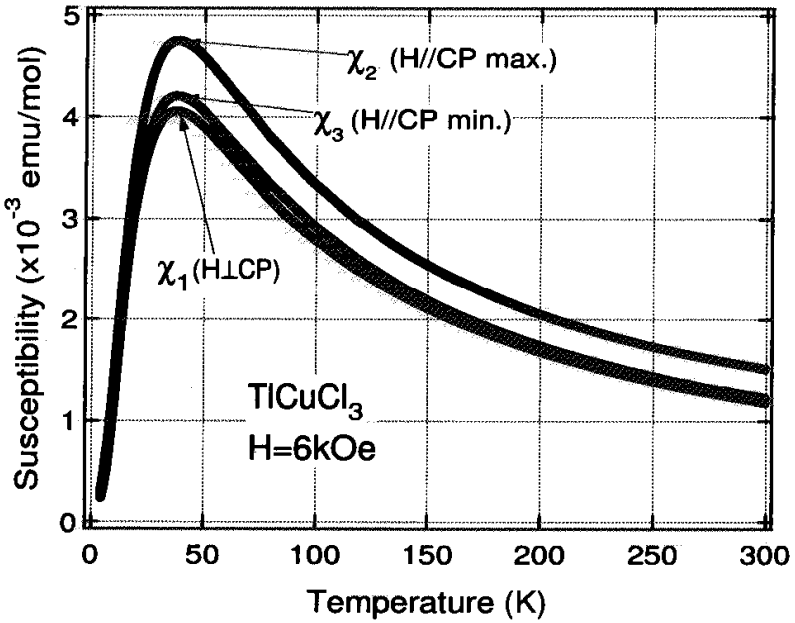


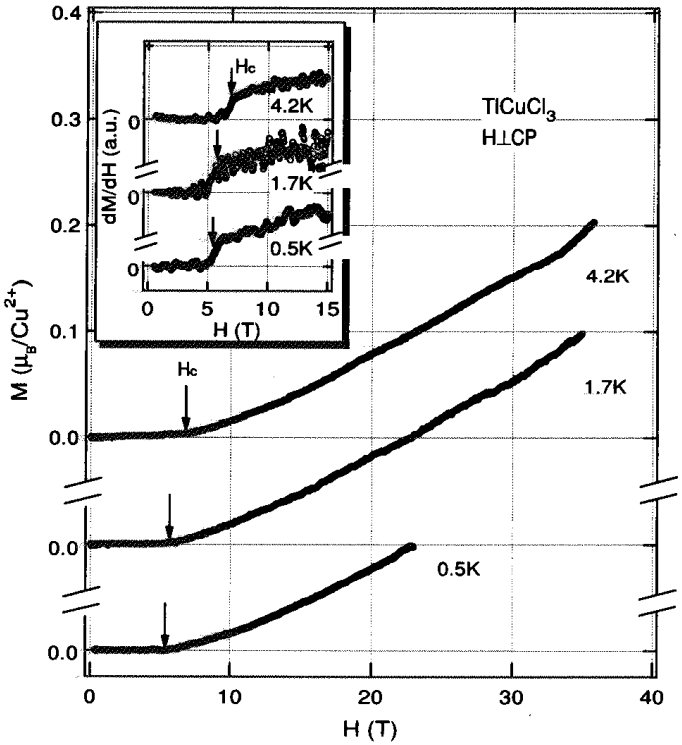




Planar dimers of Cu_2Cl_6

Susceptibility and magnetization





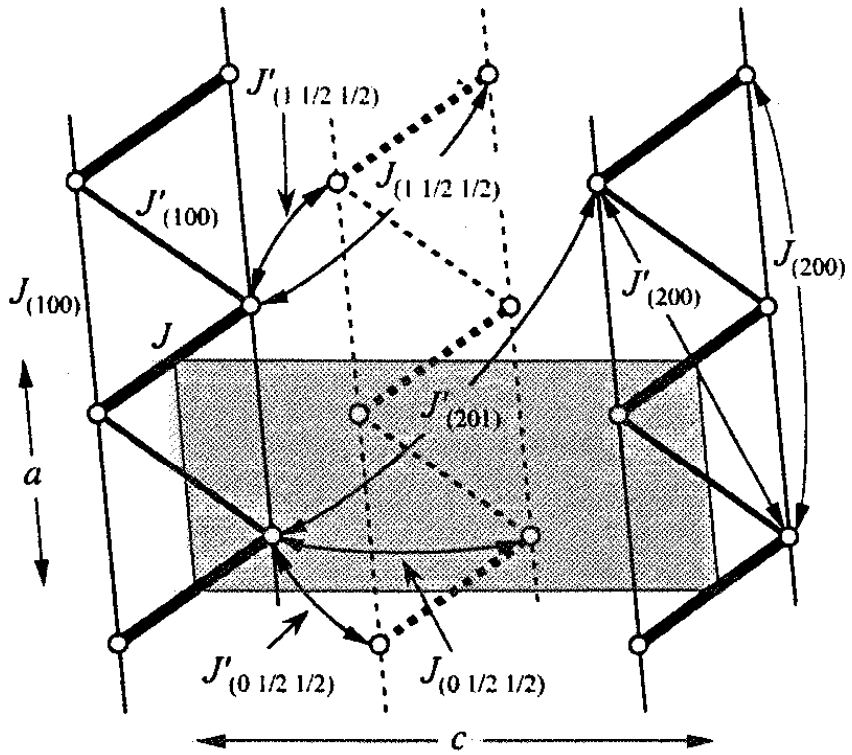
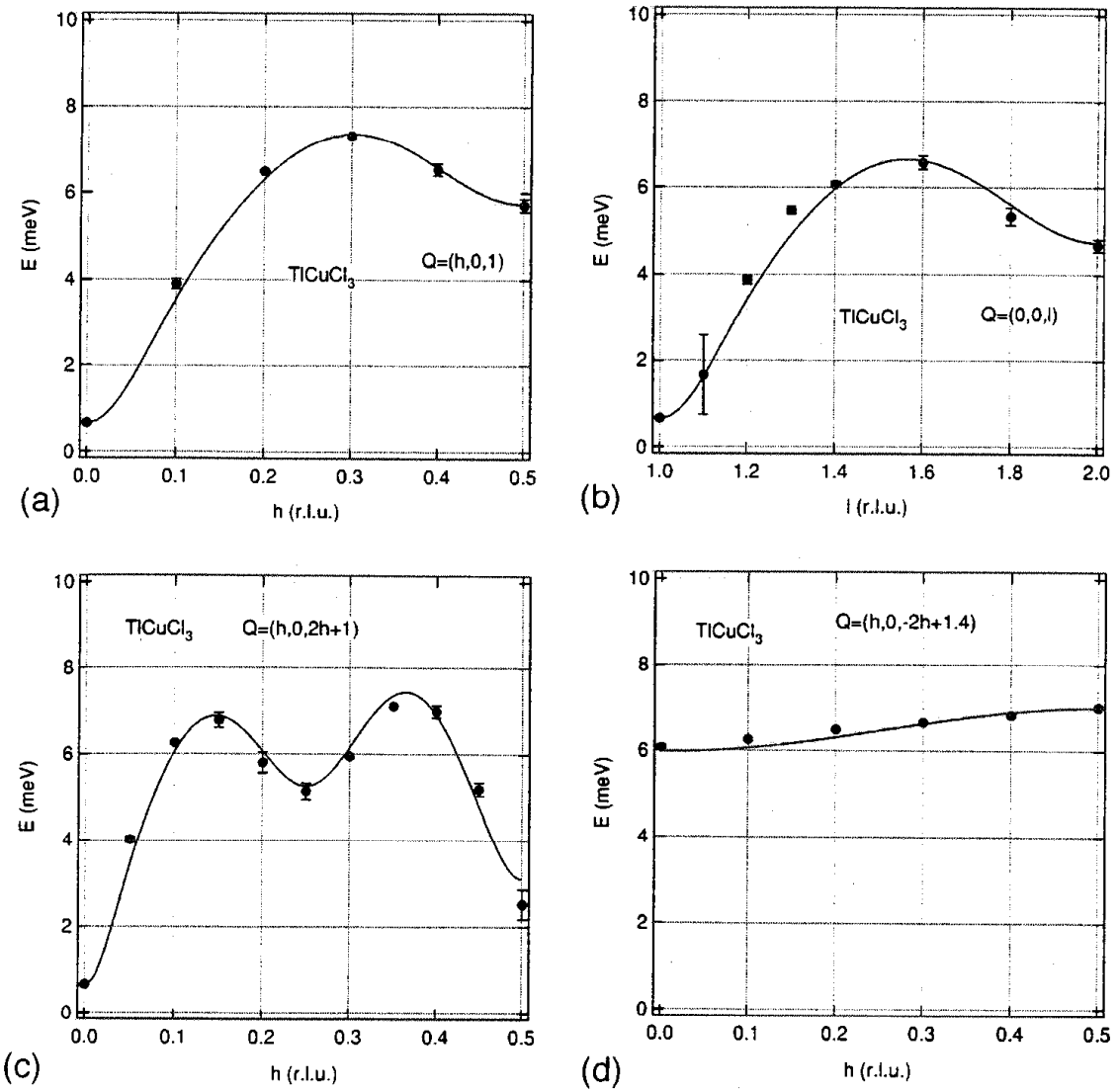


FIG. Projection of Cu^{2+} ions with spin-$\frac{1}{2}$ on the a-c plane and the exchange interactions. The double chains located at the corner and the center of the chemical unit cell in the b-c plane are represented by solid and dashed lines, respectively. The shaded area is the chemical unit cell in the a-c plane.



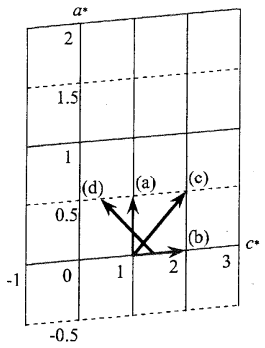
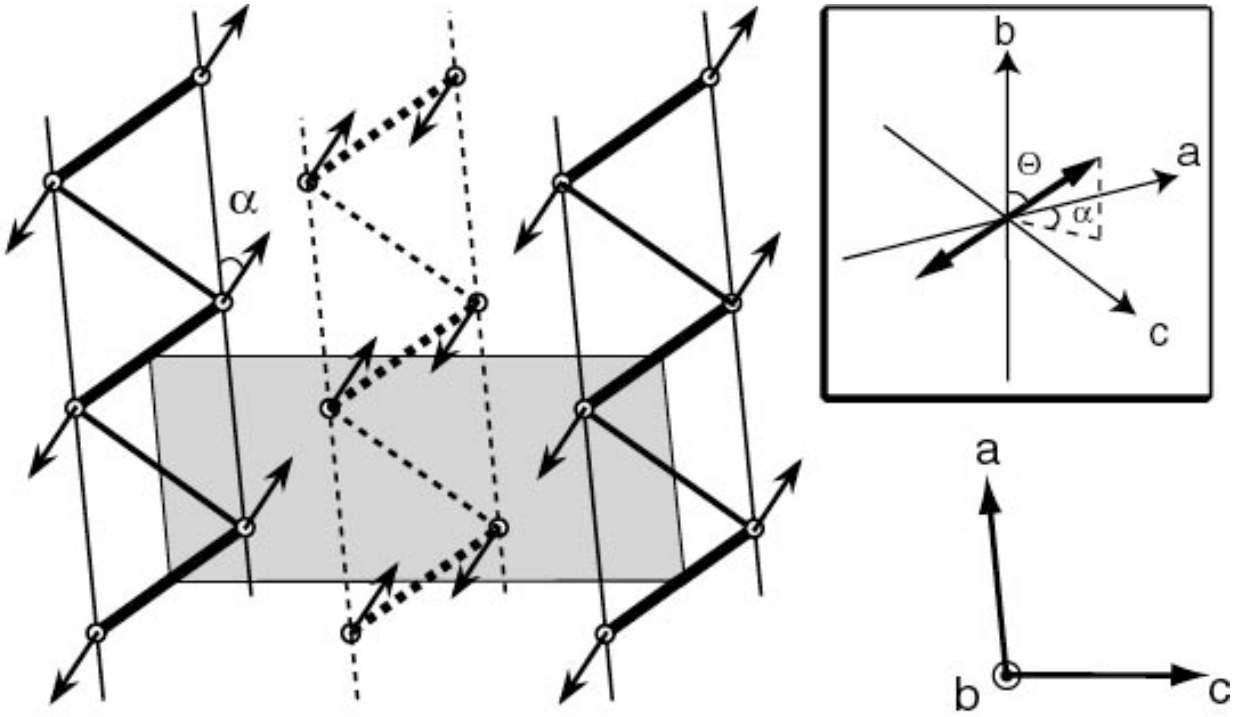
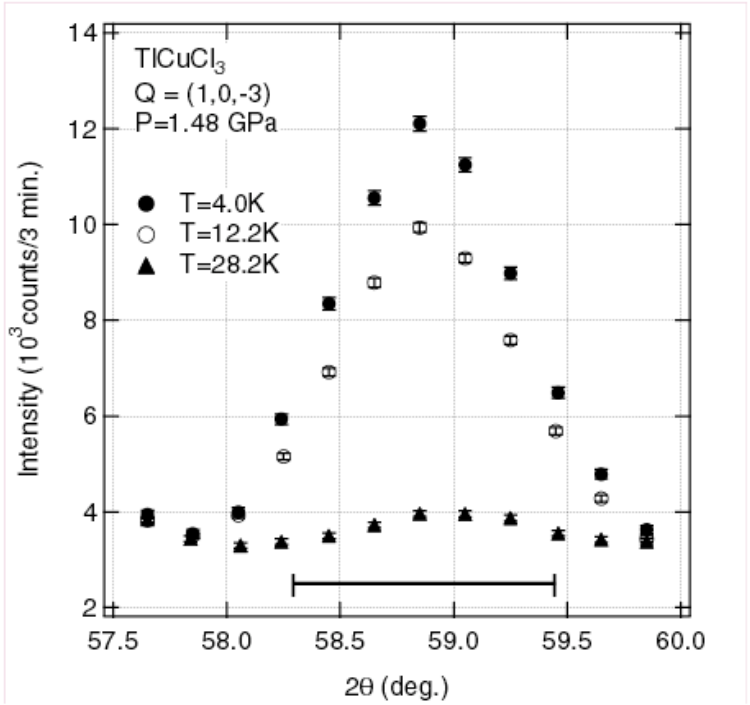
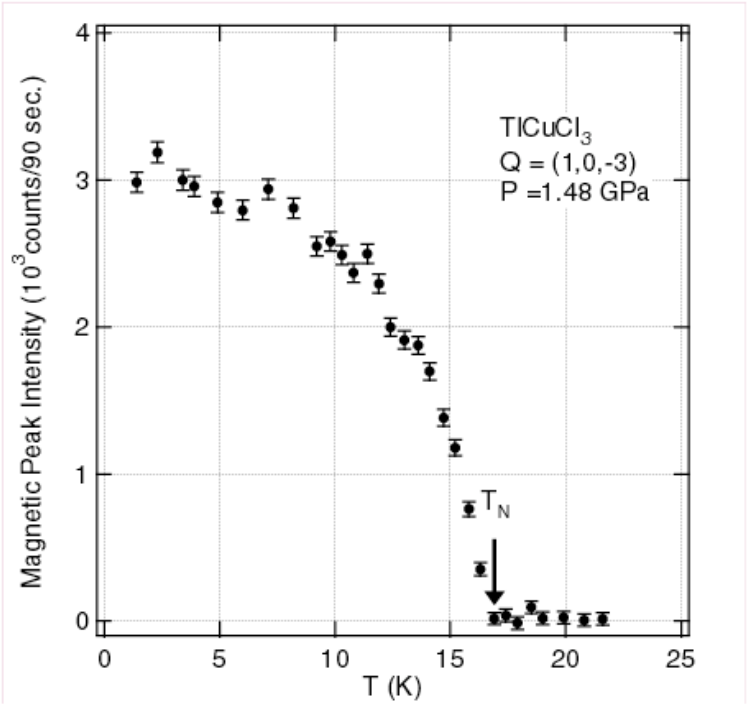


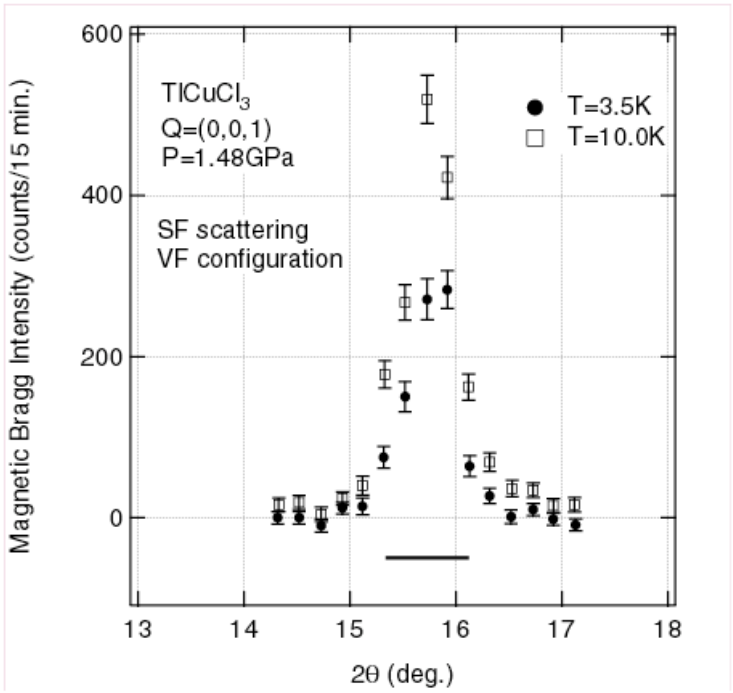
FIG. Scanning directions for Q along (a) $(h,0,1)$, (b) $(0,0,l)$, (c) $(h,0,2h+1)$, and (d) $(h,0,-2h+1.4)$.

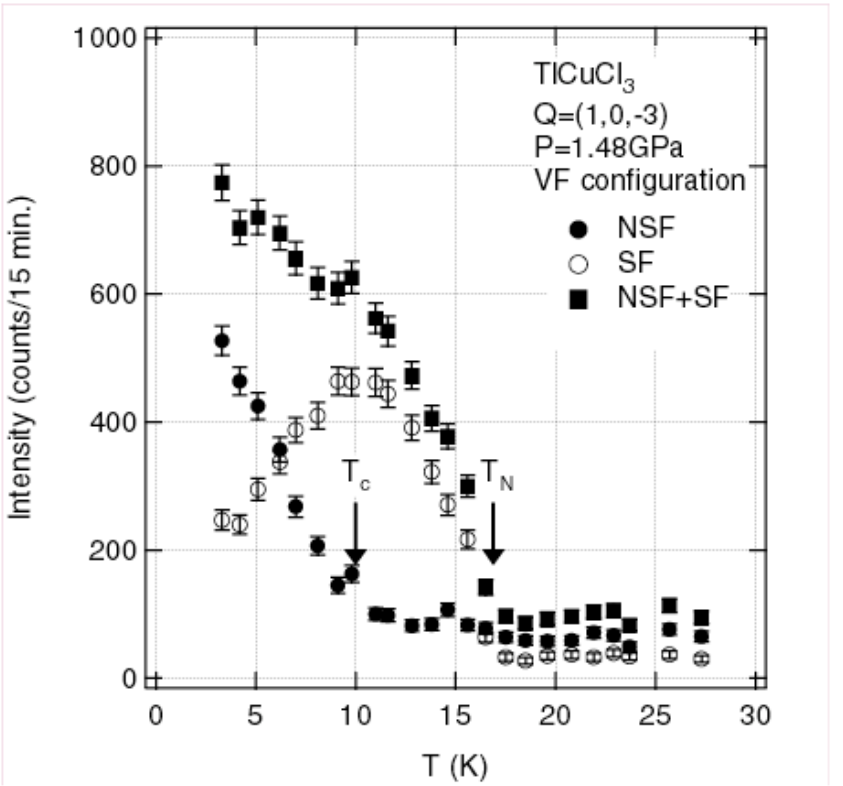
FIG. Dispersion relations $\omega(Q)$ in $TlCuCl_3$ for Q along (a) $(h,0,1)$, (b) $(0,0,l)$, (c) $(h,0,2h+1)$, and (d) $(h,0,-2h+1.4)$. Solid lines are the dispersion curves calculated by cluster series expansion to the sixth order using the exchange constants in Table III.


α
b
a
Θ
α
c
a
b
c

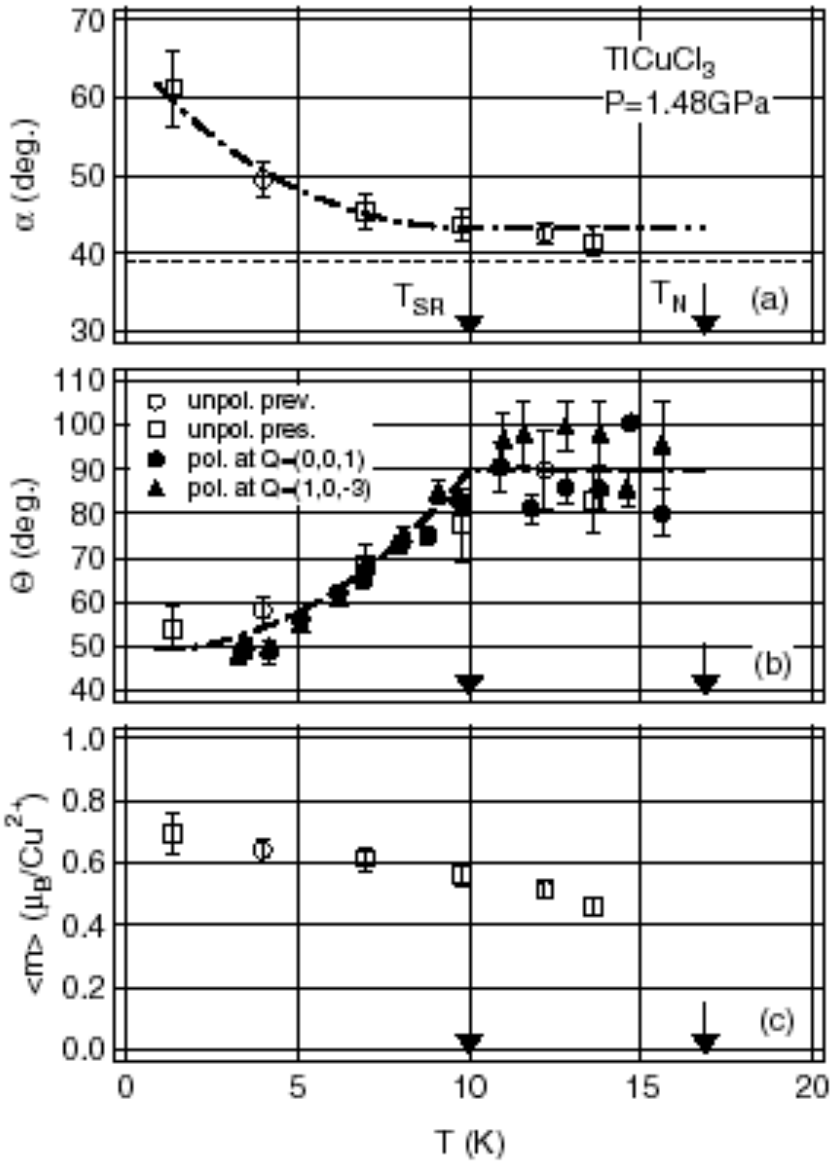

TlCuCl3
Q = (1,0,-3)
P=1.48 GPa
T=4.0K
T=12.2K
T=28.2K
Intensity (10^3 counts/3 min.)
2θ (deg.)
14
12
10
8
6
4
2
57.5
58.0
58.5
59.0
59.5
60.0


TlCuCl3
Q = (1,0,-3)
P =1.48 GPa
T_N
Magnetic Peak Intensity (10^3 counts/90 sec.)
T (K)
4
3
2
1
0
0
5
10
15
20
25


TlCuCl3
Q=(0,0,1)
P=1.48GPa
SF scattering
VF configuration
T=3.5K
T=10.0K
Magnetic Bragg Intensity (counts/15 min.)
2θ (deg.)
600
400
200
0
13
14
15
16
17
18


TlCuCl3
Q=(1,0,-3)
P=1.48GPa
VF configuration
NSF
SF
NSF+SF
Tc
TN
Intensity (counts/15 min.)
T (K)
1000
800
600
400
200
0
0
5
10
15
20
25
30

Temperature dependence of α,θ and m



Gradual change of spin direction can be explained by competition between the quadratic anisotropy with preferred axis in the a-c plane and the anisotropy of the fourth order with the preferred axis along the b-axis

The magnetoelastic coupling is responsible for the reorientation of the ordered moment

Inelastic experiment on longitudinal spin fluctuation in Ising like AF chain system $TlCoCl_3$